University Currents

A Newsletter For and About the University Nuclear Engineering and Science Community

U. S. Department of Energy *Fall 1999*

Department of Energy Partners with South Carolina State University

Dr. Leroy Davis, President, South Carolina State University, William D. Magwood, IV, Director, U. S. Department of Energy, Office of Nuclear Energy, Science and Technology, Director, and Dr. James Anderson, Dean of the School of Engineering Technology and Sciences.

On November 18, 1999, Director William D. Magwood, IV other members of the Office of Nuclear Energy, Science and Technology (NE) visited South Carolina State University (SCSU), an Historically Black College (HBCU) in Orangeburg, South Carolina. They met with Dr. Leroy Davis, SCSU President, Dr. Roy Isabel, Associate Vice President for Research and graduate Studies, and Dr. James Anderson, Dean of the School of Engineering Technology and Sciences to discuss the implementation of two new programs at SCSU. During the visit, Mr. Magwood spoke to an assembly of SCSU engineering students and faculty about NE's university programs, announcing two new initiatives which will have a profound effect on encouraging minority students to become involved in programs of study related to nuclear energy.

The first initiative provides for the establishment of a scholarship and fellowship program involving HBCUs, Hispanic Serving Institutions, and Native American Tribal Colleges, providing support to students interested in pursuing a degree in nuclear engineering. This program will pair minority institutions with nuclear engineering degree granting institutions to increase the number of minority students entering the field of nuclear engineering. SCSU and the University of Wisconsin will participate in a pilot program beginning in January 2000, with expansion to other universities planned by the Fall of 2000. Look for an announcement in January 2000 opening this program to all other nuclear engineering schools and minority institutions.

In the second initiative, the Department will provide at least $100,000 a year for three years to establish a faculty chair in nuclear engineering a SCSU. Several regional nuclear utilities have also expressed considerable interest in supporting this initiative. With this chair in place, SCSU will play a major role in managing the scholarship and fellowship program involving participating universities and minority institutions. This is the second chair in nuclear engineering NE has sponsored at a minority institution. The other is at Morgan State University in Baltimore, Maryland.

Nuclear Energy Campus Connection
http://campus.ne.doe.gov

As promised in the Late Summer Issue of University Currents, the Office of Nuclear Energy, Science and Technology's on-line message board is now available. The site can be found at http://campus.ne.doe.gov. This site is available to nuclear engineering students and provides them with the opportunity to share information and communicate with others throughout the Unites States and contact the Office of Nuclear Energy, Science and Technology. Professors are encouraged to make their students aware of this site.

Department of Energy Summer Bridge Program

The second year of the Department of Energy Summer Bridge Program was completed in August. Thirty-two students from twelve Baltimore metropolitan area high schools participated in the program. The program's academic components coupled with appropriate follow-up courses at the students' parent schools, were designed to bring them to calculus ready status by the end of their senior year. A comprehensive curriculum was offered which included formal instruction in SAT Mathematics, SAT verbal, Biology, Physics, English III, Algebra II and Pre-Calculus, as well as communication, computational and self improvement skills development. Ninety-four percent of the participants attained passing grades for all classes taken. Another program goal was for these students to qualify for college admission with high scores on the SAT's taken during their junior/senior year. We are proud to announce the students final practice SAT scores increased an average of 131 points at the conclusion of the summer program. If other schools are interested in beginning a program similar to this one, please contact Nancy Hebron on 301-903-1536 or e-mail her at Nancy.Hebron@hq.doe.gov.

Reactor Sharing and Matching Grant Solicitation

The proposals for the Reactor Sharing and Matching Grant programs are due January 21st and 28th respectively. The Reactor Sharing program is offered to all U.S. universities with operating research reactors. The program enables each university with a research reactor to share it with other institutions by providing educational tours, conducting scientific research, or demonstrating the operation of the reactor for high school or elementary school students. For the first time this year, up to 35 percent of the funds provided may be used by departments at the host university. Last year approximately $700,000 was provided for this program. The Matching Grant program is a 50/50 cost-shared endeavor with the private sector, typically a nuclear utility. Nuclear Energy provides up to $60,000 (up from $50,000 for the previous years) to each university that obtains a matching contribution from a private organization. These funds are used for upgrading the laboratory or equipment at the institution and/or for providing support for students and faculty in the school of nuclear engineering. Last year, more than $1.6 million was provided for this program.

Extension of Nuclear Engineering Chair at Morgan State University

In FY 1995, the Office of Nuclear Energy, Science and Technology established and funded a chair in nuclear engineering at Morgan State University in Baltimore, Maryland. The chair was occupied by Sekazi Mtingwa until June 1999 when Professor Mtingwa decided to return to his home school, North Carolina A&T. We are happy to announce that Morgan State and DOE have agreed to an extension of the chair beyond the five year period for which DOE/NE provided funding. Once the DOE/NE funds have been expended, Morgan State will continue to fund the chair using institutional funds and contributions from interested utilities. A search is being conducted for a successor to Professor Mtingwa and should be concluded for the start of the fall 2000 semester.

Season's Greetings

The Office of Nuclear Energy, Science and Technology wishes each of you a Happy Holiday Season and a Safe and Successful New Year.

Dodds wins 1999 Arthur Holly Compton Award

Dr. Lee Dodds, IBM Professor and Head of the University of Tennessee Nuclear Engineering Department, received the 1999 Arthur Holly Compton Award from the American Nuclear Society for his contributions to education in nuclear science and engineering. He was recognized for "his scholarly writings and research, his inspiring standards of technical excellence, and his ability to instill in his students the lasting values that have led them to become outstanding professionals." Professor Dodds is a Licensed Professional Engineer and a Fellow of the American Nuclear Society.

University Reactor Instrumentation

The Department of Energy has received twenty-three proposals in response to the University Reactor Instrumentation (URI) Program solicitation. The proposals will be separated into a East and West group and will be sent to reviewers assigned to the East or West Review Team, with the West Team reviewing the East proposals and visa versa.

There are three reviewers and one alternate on both the east and the west team. The reviewers do not see or review proposals that contain their own university's proposal. The reviewers will be comparing all of the proposals in their group and ranking the requests in accordance with the guidelines indicated in the URI solicitation. A meeting will take place in February with all of the reviewers to finalize funding levels for each application. Award letters will be issued in late March 2000 and the grant awards will be made in May 2000.

The East Review Team is comprised of Fred Sears (Penn State), Kenan Unlu (Cornell), William Vernetson (Florida), and Robert Agasie (Wisconsin) as an alternate. The West Team includes Jack Higginbothan (Oregon State), George Miller (California-Irvine), David Freeman (currently Missouri-Rola but soon to be Kansas State), and George Tripard (Washington State) as an alternate. The time and expertise of all the panel members and Leo Bobek (Massachusetts-Lowell), who assembled the panel, are appreciated.

The twenty-three requests total about $1.6 million while the available funds are $0.845 million less a small amount for management fees.

The "French Connection" with Aggieland

Twenty-six students and two faculty members from the Department of Nuclear Engineering at Texas A&M University attended the recent Student Branch Conference of the French Nuclear Society, held at the EPF Engineering School in the southern suburbs of Paris, France, on November 25 and 26, 1999. This conference entitled "The Nuclear Industry, a Benefit for the Environment?" was very helpful in providing a strong international dialog on the pros and cons of the impact of the nuclear industry on the environment, the treatment of nuclear waste, and a dialog on alternative energy sources. In addition to plenary and parallel workshop sessions, one banquet featured a group discussion on the issues associated with the long-term management of nuclear waste. The concluding banquet featured a group critique of the conference and suggestions for the follow-on conference.

A breakdown of the educational levels represented by the A&M students was as follows: two freshmen, three sophomores, five juniors, six seniors, and ten graduates. Needless to say, the A&M students found a few moments outside of the conference to explore the topography of Paris, a city that boasts a few attributes differing from those readily available at College Station! They explored neutron tunneling effects in the Catacomb, streaming effects along the Champs Elysees, point sources from the tip of the Eiffel Tower, and the artistry of "all things nuclear" within the halls of the Louvre!!

A major impetus for the success of this program was the strong revitalization of the American Nuclear Society and Health Physics Society student branches on campus. By instituting a "point system" early in the academic year, students were drawn into a plethora of activities to promote the understanding of nuclear and radiological engineering on campus. Students earning the highest number of points were rewarded with free airfare to France. Department of Nuclear Engineering support was in keeping with a strong commitment by the University to provide students a foreign experience as part of the overall educational curriculum. This is especially important in the field of nuclear engineering, given the strong evolution toward cross-cultural approaches to solving global nuclear issues.

Perez Receives the 1999 Wigner Award

Dr. Raphael B. Perez, Professor Emeritus of Nuclear Engineering at the University of Tennessee, was recently selected to receive the American Nuclear Society's Eugene P. Wigner 1999 Award in Reactor Physics. The award was established in 1990 to honor reactor physicists who have made outstanding contributions to the advancement of the field of nuclear reactor physics. The first two award recipients were Eugene P. Wigner (1990), Nobel Laureate, and Alvin M. Weinberg (1991), former Director of the Oak Ridge National Laboratory. Professor Perez is a Fellow of the American Nuclear Society.

Nuclear Engineering Education Research

The Department of Energy's NEER solicitation closed on November 18, 1999. A total of 115 eligible proposals were received and as of early December aabout thirty percent of them had been sent out for peer review. The reviewers have until January 12, 2000 to complete their reviews. The reviews will be compiled at Idaho and a review of the scoring conducted. Final decisions on proposals recommended for award will be made by late February or early March by DOE/NE with awards announced in late March. Actual awards will be made in May 2000.

A Resurgence in Enrollment at Texas A&M

In sharp contrast to the past decades, national downward spiral of student enrollment in U.S. nuclear engineering programs, Texas A&M University experienced a substantial increase in their undergraduate enrollment for the 1999/2000 academic year. Their undergraduate enrollment increased from 55 in the fall of 1998 to 91 in the fall of 1999, representing a 65 percent gain.

This should come as good news to a profession that has been struggling in recent years to attract good students into the nuclear program. Whereas there are likely several reasons for the increased interest, the two principal factors appear to be increased scholarship support and a very attractive job market, according to Dr. Alan Waltar, Professor and Head of Nuclear Engineering at Texas A&M.

The increased scholarship support has come mainly from increased Department of Energy scholarship funding and from the Stinson Scholars program. The DOE fund-matching program has enabled the awarding of many more scholarships than in the past. Further, the newly developed Stinson Scholars program, which offers $10,000 scholarships over a 4-year undergraduate program, has received very favorable backing from industry. First year sponsors include TXU, ENTERGY, and Reliant Energy. Needless to say, being able to offer scholarships of this magnitude has attracted considerable attention among the brightest high school and first-year engineering classes.

The second major factor, which has attracted immediate attention, is the starting salaries being offered to nuclear engineering baccalaureate students. Whereas the Department of Nuclear Engineering is the smallest of the ten engineering departments within the Texas A&M College of Engineering, the average starting salary for BS nuclear engineers last year was the highest in the entire College (slightly over $49K, plus signing bonuses in many cases).

This message demands, and has received, attention!

Certainly there are numerous other factors both of an external and internal nature that are likely influencing renewed interest in nuclear engineering. Externally, there is clearly a more positive attitude on "things nuclear" at the state and national level, and the global climate controversy is stimulating young people to recalibrate their thinking about the role of nuclear technology. Internally, the entire faculty and staff at A&M have been focused on ways to attract and cultivate a true "nuclear family" atmosphere within the department. But being able to provide gifted, young students with an assurance of good jobs, plus attractive scholarships to get through the rigorous program, are certainly keys to the resurgence.

Other programs are encouraged to expend efforts along these lines, since it is important that the "nuclear educational boats" rise throughout the country in order to provide the nuclear technical talent so crucially needed by the nuclear profession in both the short and long-term.

Other schools have also experienced enrollment gains in nuclear engineering. Those schools are invited to share their insights into the reasons why in future issues of University Currents.

1999 American Nuclear Society Student Design Contest

Eleven entries from university nuclear engineering programs in the U.S. were submitted in the 1999 Student Design Contest sponsored by the American Nuclear Society (ANS). Four of the entries (two graduate and two undergraduate) were selected as finalists by a panel of judges from industry and invited to make oral presentations at the ANS National Meeting held recently in Long Beach, California. A second panel of judges attended the presentations by the student finalists and determined the following winner and runnerup in each category:

Undergraduate Category

Winner: "Design of a Lead-Bismuth Cooled Fast Reactor Facility," R. Cohen, V. Curran, N. Kutsuzawa, A. Novak, and K. Noyes (Massachusetts Institute of Technology)

Runnerup: " High Plutonium-Thorium-Uranium Mixed Oxide Fuel," B. Horner, M. Riemer, S. Spillane, and D. Wenzel (Purdue University)

Graduate Category

Winner: "Pressure Vessel Diameter Reduction for a Modular Pebble Bed Reactor," B. Rasmussen and J. Getty (University of Tennessee)

Runnerup: "Design of an In-Core Fast Irradiation Facility for Use at the LEU-Fueled University of Massachusetts-Lowell Research Reactor," A. Jirapongmed, K. Randall, and R. Tooker (University of Massachusetts-Lowell)

The 1999 Contest marked the 25th Anniversary of the ANS sponsored annual Student Design Contest which began in 1975. Congratulations to our two winners and two runnerups. The solicitation for entries in the year 2000 contest will be mailed to all nuclear engineering programs in January of 2000.

Whiz Kid Quiz

In the last issue of *University Currents*, the Office of Nuclear Energy, Science and Technology announced it would soon be offering an internet game called the ***Whiz Kid Quiz.*** The ***Whiz Kid Quiz*** has been delayed and it's new start date will be announced when known.

FOR ADDITIONAL INFORMATION OR SUBMISSION OF ARTICLES FOR PUBLICATION, PLEASE CONTACT:

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Important Dates To Remember

January 21, 2000
Research Sharing Proposals Due

January 28, 2000
Matching Grant Proposals Due